TESTIMONY OF

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"Beyond Microfinance: Empowering Women in the Developing World"

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Let me start by saying that the world has made remarkable progress in alleviating global poverty. Without a doubt, for most of the world's population, now is a much better time to be alive, than even thirty years ago. This has happened, not in small steps, but in amazing leaps and bounds. In 1981 an estimated 44 percent of the world's population was living in extreme poverty, (living daily on less than what $1.90 buys in the U.S.). In 2013, that number had dropped to a quarter of that, 11 percent.[1]

That said, women's progress has not kept up with men's in many areas. But, new waves of research are discovering a promising new area, the growth of digital financial tools that help even poor women in remote areas join the economy and manage their even limited means more effectively. This in turns appears to spur increases in women's economic empowerment.

The financial tools I am speaking about were made possible by an innovative government grant. In this case, millions of private sector digital transactions each day in poor countries can be traced back to a small decision by the UK's international development agency to fund a pilot of a new idea. When government agencies commit to innovation, small grants can lead to large outcomes by bringing in private sector actors. As in the UK, we are starting to see similar innovation within the broader U.S. international aid community, using Silicon Valley style investments. Norfund, a private equity company, established and funded by the Norwegian government, is also a great example. Good data-driven thinking, which brings together government and private sector innovations, can bring big payoffs.

I am here today to talk about what we have learned most recently in women's economic empowerment in developing countries, and particularly how the spread of new financial tools is affecting women's lives. Gender equality is one of the Sustainable Development Goals (SDGs) set forth by the UN, an agenda set out to ensure global prosperity. It is well documented in the developing world that women lag behind men in economic access and outcomes. For example, only 39% of the total workforce in low and middle income countries is female; only 38% of firms have any female participation in ownership; and only 22% of seats in national parliaments are held by women.

[1] Based on World Bank data. Roser, M. and E. Ortiz-Ospina, 2017. Global Extreme Poverty. Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/extreme-poverty/.

These statistics show that we have a long way to go towards gender equality in the developing world. However, new findings from rigorous research point to opportunities for women to become more empowered and economically self-sufficient. These come thanks to a number of new financial tools that bring simple economic capabilities many women have historically lacked to anywhere within reach of a mobile phone network. In particular, the findings point to the catalyzing role governments can play in paving the way for private sector innovation.

As such I will focus in my testimony on two important components. The first component is women's access to financial services and their financial wellbeing. The second component is enhancing the use of enabling technology, in particular information and communications technology, to promote the empowerment of women. These two aspects have fundamental effects on women's economic opportunities and whether they are able to move out of extreme poverty. As Figure 1 shows, the percentage of women having their own account at any financial institution is not just low, but it lags behind that for men across most of the developing world. As my testimony will highlight, digital technology is key to expanding the access of women to a wide variety of tools that enhance their economic wellbeing.

1. Financial Health and Wellbeing: The Role of Mobile Money

In economics, we use the term "financial health" as a shorthand for the ability to use basic tools you and I take for granted to manage our daily financial lives. These include access to a bank account to save for the future and buffer against hard times, to payment systems for conducting business, and insurance, so that we don't have to borrow and go into debt when inevitable life setbacks occur. These tools are all the more important for the world's poor, who on any given day, may only have a dollar or two of solvency they have to use wisely to keep their families going and stay above financial disaster.

We know though, that by and large, the worlds' poor are not poor because of bad decision making, they are poor because they were born in poor locations and in poor circumstances. But data from every corner of the globe shows us time and again that when they get access to the basic financial tools that you and I use every day, they start to engage in commerce, save, and make good financial decisions. Women in particular, start to become more empowered and financially self-sufficient and more economically successful when they get the ability to make secure and private payments.

I want to discuss one example from my research of how important financial health is for women in the developing world. That is the example of mobile money, essentially an "app" that works on "dumb" phones via old fashioned text messages, allowing anybody with even the most basic mobile phone to deposit, transfer and withdraw money from an account on their phone without actually owning a bank account. Imagine Apple Pay, PayPal or Venmo but without a credit card or bank account behind the payments. Mobile money is distinct from mobile banking as there are no bank accounts behind each mobile money account, just a phone number tied to a virtual account and a digital record of the money in and the transactions on your account.

However, easy as it is to transmit money over wireless networks, at the end of the day, one still needs to be able to put cash in and get cash out. Though a mobile money account feels like a bank account for a consumer, the back end is quite different. The money in a mobile money account is virtual and it trades one for one with cash (minus a transaction account for withdrawals and for sending money to another phone). When a customer deposits money in his mobile money account he will do so at a mobile money agent and he is, in fact, purchasing an equivalent amount of virtual money. The agent he deposits at must therefore have a stock of virtual money to "sell" to the consumer. These agents therefore provide the cash in/cash out services for a consumer: they have to go to an agent to deposit or withdraw cash. The primary role of the agent is to manage the stocks of cash and virtual money he holds.

Who are these agents? They are all existing business and entrepreneurs who sell prepaid phone credit or are small businesses selling basic groceries, existing gas stations, drug stores, tailors, etc. – common small, often informal businesses which exist even in the most remote villages. As of December 2014, there were about 2.5 million agents globally, with the network growing at 25.2% annually.[2]

Given the mobile phone is now ubiquitous in the developing world (with a billion subscribers in India and over 680 million in Sub-Saharan Africa), mobile money has been quickly adopted as an easy add-on to the mobile phone. There are now over 270 mobile money services (most offered by telecommunications companies or private entrepreneurs) across 93 different countries and over 100 more services planned in the near future. There are more mobile money accounts than bank accounts in 19 countries, and there are at least ten times as many mobile money agents as bank branches in 37 countries. There are over 400 million accounts in the world, over 220 million in Sub Saharan Africa, and over 30 million transactions are completed a day (more than twice PayPal across the world). [3] Figure 2 shows the adoption of mobile money accounts across the world.

Let me now turn to what mobile money actually does and why it improves economic opportunities for women. This is based on research I have been conducting over the past eight years on the most prominent mobile money service in the world, which is in Kenya and is called M-PESA (M for mobile and PESA means money in Swahili).

Over the past eight years, we have studied the adoption and impacts of mobile money in Kenya. Towards the end of my testimony, I will talk about innovations that have followed M-PESA in Kenya and the role of technology in expanding women's economic opportunities further.

The story behind M-PESA is an interesting and relevant one. The idea came from Britain, from two employees at Vodafone who thought up this technology as a way for individuals to pay off

[2] The requirements to become an agent vary across countries. Finally, the cash deposited in mobile money accounts is ultimately held in the banking system, often pooled in one or two trust accounts in particular banks. The consumer who has an account has ownership over this trust account and their value of digital money is recorded in the trust account but they cannot interact with the trust account through banks, they have to use the mobile money agents across the country to deposit or withdraw money.

[3] See Groupe Speciale Mobile Association (GSMA), 2015. State of the industry: Mobile Financial Services for the Unbanked.

microfinance loans digitally. They raised money (a challenge grant) from the UK government's equivalent of USAID, the Department for International Development, to pilot the technology in Kenya. The pilot led to a very different product and hence business model than originally thought but also led to the fastest adopted digital technology in the world.

Why was M-PESA so popular? The reason is that it filled a very core and basic financial need for individuals in Kenya and is doing so across the developing world now.

A key component of financial wellbeing is something we refer to as financial resilience, i.e. how people manage risk.[4] It is the ability of individuals to deal with unexpected setbacks that happen in their lives. Financial resilience is a function of three core aspects of an economy: (i) access to banks and the ability to save money in these banks for a rainy day, (ii) access to private markets for insurance (for example health insurance), and (ii) the extent the government provides social safety nets (for example, unemployment insurance). In the developed world, these three segments are important to financial resilience. In the developing world, bank accounts are not easy to access (see Figure 1), only the very rich can afford private insurance and the governments often do not have large budgets for social safety nets. What does this mean for poor households in these economies?

The poor, even those who eke out a living, are never more than one drought, flood, or illness away from personal disaster. Given how risk is a pervasive part of their lives,[5] how do poor households in these economies survive? One way the poor manage risk is through what we call "informal insurance" – which is an economist's way of saying borrowing from a friend when you get into trouble, and only paying back when they get into trouble. This essentially means they use their social networks as insurance. For any kind of insurance to work, you need the person helping you out to be in a better situation than yourself, and borrowing from a friend is no different. If you are a farmer suffering through a drought, your neighbor is probably in the same situation, so you will want to borrow from someone who looks as different from you as possible. Typically that means someone far away. In these countries it used to be very difficult and expensive to transport cash across a long distance. It would have to pass through several sets of hands and usually a bus ride or two. Each time it the cash from your distant friend or cousin changed hands on its way to help you meant more expense and risk.

There has been over twenty years of research documenting these informal insurance relationships in a wide variety of developing economies, showing they do have impacts on financial resilience and economic wellbeing. However, they are far from perfect since moving cash over distances in these economies is difficult and comes with costs and risks. And, the further away your social network, the more expensive and difficult it is to share money and hence insure yourself. These costs that we refer to as transaction costs ultimately limit the extent of your insurance network by

[4] Both the Center for Financial Services Innovation and the Consumer Financial Protection Bureau include resilience as part of their definitions of financial well-being. CFSI includes "ability to be resilient in the face of inevitable ups and downs", and CFPB included "capacity to absorb a financial shock".

[5] The unexpected bad events we studied in our work on Kenya were: death or illness of a household member, accidental or violent injury, loss of employment, failure/loss of business, death of livestock, crop disease, theft, robbery, burglary, assault, fire, drought, floods and unexpected price rises. Just under half of households report experiencing one such event in our data.

limiting the distance these networks can engage and hence what sorts of risks can be mitigated. If I only need a few dollars to buy some medication, it makes no sense to spend several dollars in transaction costs to get me the money.

In 2007, before M-PESA was introduced, the average Kenyan would have to walk about 6 miles each way to get to a bank.[6] So, how did the money for informal insurance travel around? It would largely be transported in person or via buses. With the launch of M-PESA, these distances effectively shrunk dramatically. There are currently over 130,000 mobile money agents in Kenya (there is an order of magnitude smaller number of bank branches in the country). The average transaction in 2008 travelled 200km for just 35 cents, as opposed to a $4.60 bus ride. By 2015, 68% of Kenyans lived within a 15 minute walk of an M-PESA agent.[7] Financial resilience transactions were suddenly safer, cheaper, easier and quicker.

Now what does all this have to do with women? Let me discuss our findings on M-PESA. Between 2008 and 2014, we collected data on households across most of Kenya to understand the impacts of M-PESA. Over these eight years we have two key headline sets of findings.

In our first studies,[8] we showed that M-PESA improved financial resilience. We find that when unexpected setbacks happen, those with access to M-PESA are able to manage their lives better. We measure this by looking at how much households have to reduce their expenditures when an unexpected bad event happens, i.e. if an income earner gets sick or if there is a drought, does the loss of income imply that the household can no longer afford to purchase food and necessities for themselves. If there is a reduction in expenses at the time of a bad event, then the household is not financially resilient. We found that M-PESA improved resilience – when something bad happens, households with access to the technology did not have to reduce their expenditures as much.[9] The response of households to health events is particularly instructive as an example (as illustrated in Figure 3). When households in Kenya have an unexpected health crisis, they will all spend on medication, irrespective of whether they are extremely poor or not, irrespective of whether have access to M-PESA or not. However, those without access to M-PESA will have to take the money they spend on medication out of their budget for other items, in particular they reduce food spending and non-food spending, specifically education. For those households with access to M-PESA, they are able to not just spend on medication but also increase their expenses on food and other items that may be of help.

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[6] 32% of Kenyan households lived more than 10 km from a bank branch and 19% more than 20 km from a bank branch.

[7] The average distance to an M-PESA agent was under a mile by 2015.

[8] See Suri, T., Jack, W. and Stoker, T.M., 2012. Documenting the Birth of a Financial Economy. Proceedings of the National Academy of Sciences, 109(26), pp.10257-10262. Also see Jack, W. and Suri, T., 2014. Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution. The American Economic Review, 104(1), pp.183-223.

[9] For similar results on resilience in Bangladesh, see Lee, J., J. Morduch, S. Ravindran, A. Shonchoy, and H. Zaman, 2017. Poverty and Migration in the Digital Age: Experimental Evidence on Mobile Banking in Bangladesh. Working Paper. Similar findings in Tanzania from Riley E. 2016. Mobile Money and Risk Sharing Against Aggregate Shocks. Working Paper.

The reason they are able to do this is that they are able to reach out their social networks for help – we see that when there is a health setback, they are more likely to receive help, they receive more help (more money on their phones) and they receive help from more different types of people. Since the fee for sending money on M-PESA is not related to physical distance, households with access to M-PESA are able to expand their insurance networks to people who look different from them and who live far away, further improving the efficiency of these informal insurance networks.

Our second study used the latest data from 2014 to trace out what the longer term impacts of M-PESA have been in Kenya.[10] In particular, we find that access to M-PESA reduced extreme poverty in Kenya: it lifted an estimated 194,000 households (2% of Kenyan households) above the threshold for extreme poverty. But, interestingly, we find that these impacts are significantly larger for *female-headed* households. In addition, we find that these results are driven by the improvements in financial resilience and increased savings. But, more importantly, that when M-PESA expanded to a new area, women (both in male-headed as well as female-headed households) changed their main occupation from farming to business or retail. We document that an estimated 186,000 women across Kenya switched occupations in this way.

Why are there impacts in particular for women? Though the study was not able to pinpoint why this may be, we have a number of hypotheses on why a technology like M-PESA affected women's economic opportunities. First, as our initial studies highlighted, M-PESA was able to improve financial resilience. This should then allow individuals to rely on this to make higher risk, higher return investments, knowing that if something goes wrong, they have a network to depend on to insure that risk. Second, it may have given women control over an aspect of their finances. Before M-PESA, since a lot of these person to person transfers were delivered in person, they were very public. Everyone in the household and perhaps even neighbors knew money had arrived and it is likely that the male head of household would have control over the money. M-PESA allows individuals privacy over financial transactions even within a household. Women can receive money that is sent directly to them from their friends and family and therefore may have more control over that money. Finally, it could be that mobile money allows women to save more easily and they are then able to invest these savings into a business.

2. What About Other Financial Services

I am conscious that the hearing today mentions going beyond microfinance, which is particularly apt. Although microloans are very popular, we now have a very large and credible body of research showing that the economic impacts of microfinance are, on average, close to zero. They are a good business, but studies from all over the world show the same thing – putting poor

[10] See Suri, T., and W. Jack, 2016. The Long-run Poverty and Gender Impacts of Mobile Money. Science Vol. 354, No. 6317 (2016): 1288-1292.

people into debt is not an effective poverty solution. The loans benefit only a few specific types of individuals and do not lead to any systematic improvements in women's empowerment.[11]

Similarly, we now have a body of work around micro enterprises (very small businesses). Studies from Ghana, Sri Lanka and Mexico all show that when a business does get cash, through a grant or a loan, male-run businesses do better, but not female-run businesses.[12] However, the gender gaps are not just due to differences in ability, risk aversion or attitudes towards entrepreneurship. Follow-ups to this work are now starting to show that this often happens because even when the money goes to the women running a business, her husband often controls where the money is spent.[13] It seems that, therefore, allowing women the ability to have financial privacy and control over their incomes or investments could provide value – this fits nicely with our findings on M-PESA.

A recent paper also shows that village savings groups (that are comprised of mostly women) that have near zero transaction costs improve resilience and facilitate savings and investment and also improve women's empowerment, increasing their influence on a wide variety of decision making in the household (including decisions about household businesses).[14] These results paint the same picture as our results on mobile money for women.

Finally, it is worth mentioning a new literature on savings accounts for women, though this is very early stage work. As India digitizes their economy, they have rolled out a universal ID system and linked that to the distribution of government transfers, which has led to a dramatic reduction in leakages and corruption.[15] Similarly, a study in Niger on cash transfers to households showed that switching from a cash transfer to a digital transfer on mobile money led to more discussion within the household on how the cash transfers would be spent, increases in standard measures of women's empowerment and ultimately higher diet diversity and more meals consumed by children.[16] New work shows that allowing women recipients of these transfers to have their transfers linked to and deposited directly into their own bank accounts improves the probability they work and their earnings in India.[17]

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[11] Innovations for Poverty Action and Abdul Latif Jameel Poverty Action Lab, Policy Brief, February 2015. Where Credit is Due, available online at https://www.povertyactionlab.org/sites/default/files/publications/where-credit-is-due.pdf

[12] See Woodruff, C. S. de Mel, and D. McKenzie, 2012. One-time Transfers of Cash or Capital have Long-lasting Effects on Microenterprises in Sri Lanka. Science 335 (6071) 962-6. Also see Woodruff, C. S. de Mel, and D. McKenzie, 2009. Are Women more Credit Constrained? Experimental Evidence on Gender and Microenterprise Returns. AEJ-Applied Economics 1 (3) 1-32.

[13] See Bernhardt, A., E. Field, R. Pande, and N. Rigol, 2017. Household Matters: Revisiting the Returns to Capital Among Female Micro-entrepreneurs, Working Paper.

[14] See Karlan, D., B. Savonitto, B. Thuysbaert, and C. Udry, 2017. Impact of Savings Groups on the Lives of the Poor. Proceedings of the National Academy of Sciences, 114 (12), 3079–3084. The study covers groups in Malawi, Uganda and Ghana.

[15] See Muralidharan K, Niehaus P, Sukhtankar S. 2016. Building State Capacity: Evidence from Biometric Smartcards in India. American Economic Review, 106(10):2985–29.

[16] See Aker, J., R. Boumnijel, A. McClelland, and N. Tierney, 2016. Payment Mechanisms and Anti-Poverty Programs: Evidence from a Mobile Money Cash Transfer Experiment in Niger. Economic Development and Cultural Change, 65(1).

[17] See Field, E., R. Pande, N. Rigol, S. Schaner, and C. Troyer-Moore, 2017. An Account of One's Own: Can Targeting Benefits Payments Address Social Constraints to Female Labor Force Participation? Working Paper.

All this early stage work highlights the importance of digital technologies in growing the access and use of a variety of financial services by women, services that allow them to improve their economic wellbeing.

3. Future Innovations in Financial Services

Where to from here? Clearly, for the Kenya case, the digital technology component of M-PESA was essential to broadening access. The Kenya example also makes a good case for what may come next. In 2011, the telecom company in Kenya partnered with a bank to offer a fully digital bank account (called M-Shwari), now also offered in Tanzania, Rwanda, Uganda and Cote d'Ivoire, and by other banks and entrepreneurs (including two companies from San Francisco) in Kenya. With these digital bank accounts, individuals can use their mobile phones to open a bank account, deposit money, save and earn interest, withdraw money, request a loan, etc. The deposit and withdrawals happen via M-PESA. Underlying the loan decision is a credit scoring rule that is based on the individual's history of interactions with their phone and their mobile money accounts and sometimes their social networks. There are no loan officers, no bank tellers, and in, fact, no rural bank branches. Once the mobile money infrastructure is extensive, it is trivially simple to layer on digital financial services. The digital aspect allows the private sector providing these services to dramatically lower costs: they do not need bank branches as the existing mobile money network provides the cash in and cash out services, they do not need loan officers as algorithms and data allow them to evaluate credit risk, etc. The costs of provision are just dramatically lower in a digital system.

In addition, the telecommunications companies can also layer on a variety of business to consumer and consumer to business payment options on mobile money as has happened in Kenya. Working with government, it is also possible to layer on government transfers that, instead of being handed out in cash, are deposited digitally into recipient accounts, as is happening in India.

Finally, one new layered on service in Kenya is worth mentioning and we are currently running a study to evaluate its impacts on both male and female entrepreneurs in Kenya. Two weeks ago, the Kenyan Treasury (in partnership with the Nairobi Stock Exchange and the telecommunications company) launched a digital 3-year government bond called M-Akiba that can be purchased and sold live in the bond market entirely on any mobile phone.[18] This bond is being marketed as a savings vehicle for low income households as the minimum investment required is only $30 and it pays a 10% interest per annum. The government is trying to raise $50m through this bond issue (they already piloted a $1.5m issue in March 2017).

The big question is then how do we get digital technologies to individuals in the developing world? Who is creating them, who is scaling them? Mobile money has largely been a private sector initiative but I think it provides an interesting example. Much as the technologies are being built and provided by private sector telecommunications companies in the developing

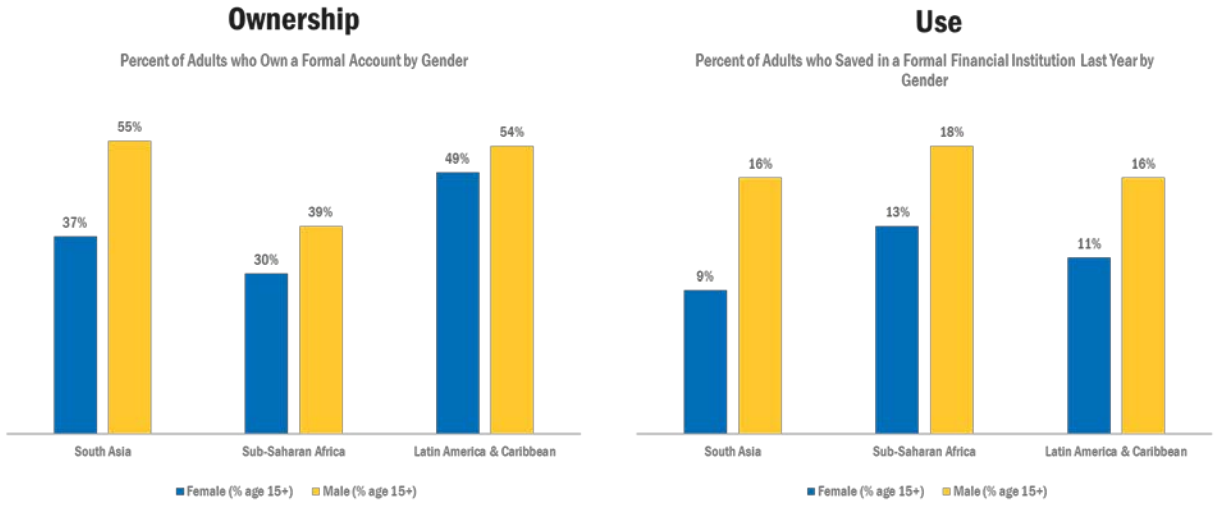
[18] Individuals use the Know Your Customer (KYC) behind their mobile money accounts to open a Central Depository System account through their mobile phone in a few key strokes.

world, the story has some nuance. The Kenya case is by far the most successful and well-known in the developing world. But, the initial investment in piloting the technology was provided by the UK Government's Department for International Development, the UK counterpart to USAID. Even a private sector company the size of Vodafone was not willing to experiment and test the technology and the idea without some seed money from an aid organization. However, the piloting was absolutely essential to the success of the service. The initial idea was for M-PESA to be a way to pay off microfinance loans. However, very few Kenyans have microfinance loans. When the system was piloted, the company realized that people wanted to use it to send money to their friends and family. The company then re-branded the product and, more importantly, built the right business model for this service. The crucial component was to build an extensive agent infrastructure for cash in and cash out. If the main use of the service was going to be sending money long distances, there would need to be agents everywhere in the country. This is one of the key reasons M-PESA has been so successful: not just the technology, but the business model to go along with the main use of the technology.

Clearly, the ability of the private sector to innovate on business models and to scale such technologies is unquestionable. However, it seems that the initial risks may need to be seeded. There is essentially no private sector R&D in the developing world, yet that component is essential. This is a role that clearly aid organizations and donors can play.

Digital technologies and fintech are booming in terms of private investment in some parts of the world. For example, the value of global fintech investment in 2015 was $22.3 billion, with the US having the largest share, receiving $4.5 billion in new funding in 2015. China had nearly $2 billion, India: $1.65 billion and Germany: $770 million. While the growth in investments in Asia-Pacific have been dramatic (a fivefold growth between 2014 and 2015), there has been little investment in Sub-Saharan Africa where mobile money systems have no doubt been the most popular. Given that Sub-Saharan Africa has some of the poorest economies in the world, they may also be the economies where the returns to fintech investments are the highest, as illustrated by the case of mobile money in Kenya. Seeding the financial innovations that can build off the success of mobile money and upgrade digital access to the entire spectrum of financial services, especially to women, could potentially have large gains and spur further investments into fintech in the developing world.

Figure 1: Bank Account Ownership and Use by Gender in the Developing World



Note: The numbers for high income OECD countries are at 94% for both males and females

Figure 2: Mobile Money Accounts Across the World

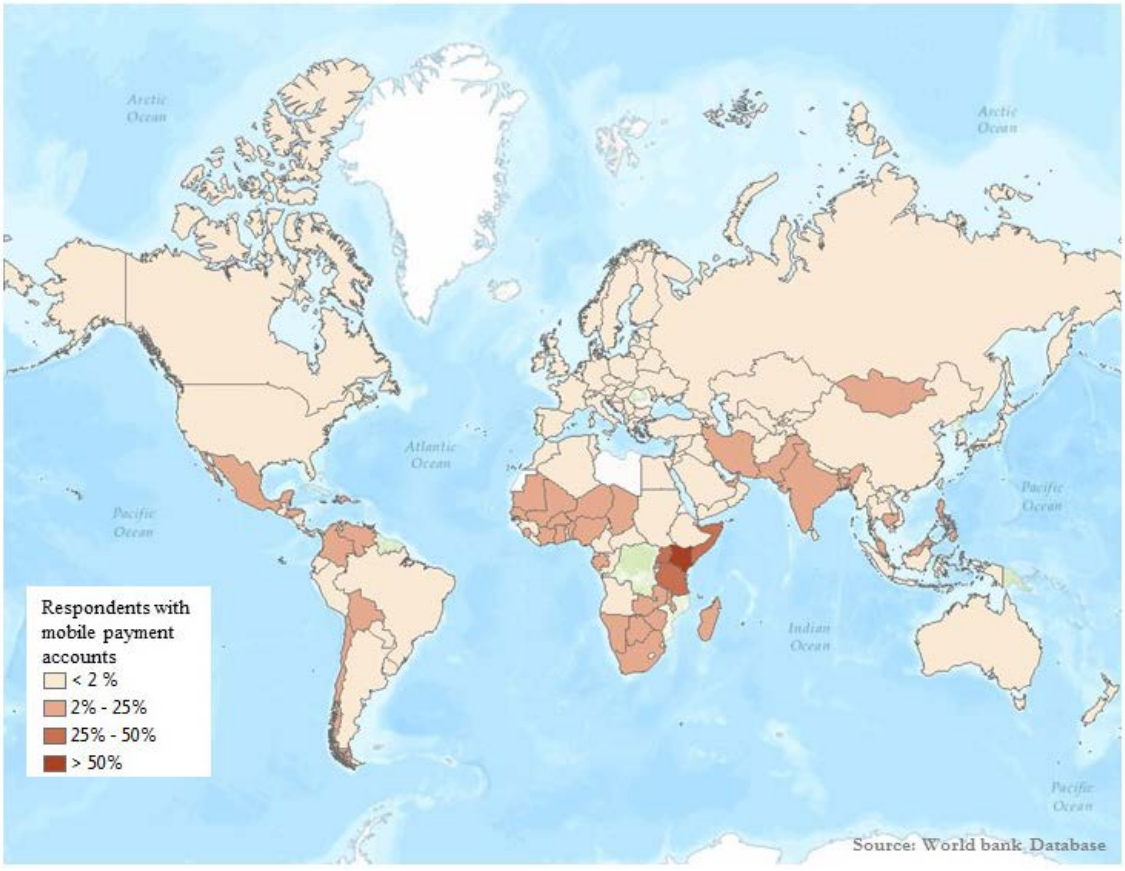


Figure 3: The Response to Health Shocks in Kenya for M-PESA Users and Non-Users